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SARDAR PATEL UNIVERSITY

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M.Sc. 2nd Semester (Surface Coating Technology) Examination (CBCS)

PS02CSCT03: Coating Properties and Analysis of coatings

Friday, 30/11/2012

Time: 10:30 am to 1:30 pm

Total Marks: 70

N.B. (1) Marks allotted to the question are on its RHS

(2) Illustrate your answers wherever necessary with the help of neat sketches & chemical equations

- Q.1(1) Which of the following is not a rheological parameter (1)
- (A) Shear Rate (B) Bingham Bodies
(C) Yield Value (D) Flocculation
- (2) Which of the following is not a unit of Viscosity (1)
- (A) Pascal (B) Poise
(C) Dyne (D) Stoke
- (3) Weight per litre, Kg is lowest in (1)
- (A) Semi glossy Paint (B) Air drying enamel black
(C) Stoving enamel black (D) Primer
- (4) Hegmann gauge reading in enamel is (1)
- (A) 7* (B) 6*
(C) 5* (D) 8*
- (5) If the wet film opacity is 20 sq mtr/ltr. Then WFT will be (1)
- (A) 40 μm (B) 50 μm
(C) 60 μm (D) 70 μm
- (6) If a paint has $NVV_T = 50\%$ and WFT 20 sq mtr/Ltr. The DFT will be (1)
- (A) 20 μm (B) 25 μm
(C) 30 μm (D) 35 μm
- (7) Which stage in AD paint refers to 'recoatibility' (1)
- (A) Sand dry (B) Surface dry
(C) Hard dry (D) Tack free
- (8) Gloss is highest in (1)
- (A) AD synthetic enamel (B) Stoving synthetic enamel
(C) NC lacquer (D) CR paint

Q.2 Attempt any seven of the following

(14)

- 1 How will you check viscosity by Ford cup no 4?
- 2 A primer of SG=1.3 is applied to 1sq mtr area. At 12 sq mtr/Lit coverage how much Wet paint is applied?
- 3 How is grinding on Hegmann Gauge checked?
- 4 Semi glossy paint of Wt/Lit = 1.17 Kg is filled in 20 Ltr empty drum (Wt=3Kg). What will be the net weight?
- 5 What are the different stoving schedules for baked enamels? Write the Alkyd-Amino Stoving film formation equation?
- 6 Classify the different 'Gloss Values' according to PVC.
- 7 Write the phenomena of sagging.
- 8 Explain the three attributes of color and Munsell color sphere.
- 9 Illustrate the phenomena of coalescence.
- 10 Write about viscoelastic nature of cured film.

Q.3(a) What are the different types of flow? Write in detail about thixotropic behavior of flow coatings? (6)

(b) What are the different methods of film formation? Write in detail about film formation in thermoplastic lacquers? (6)

OR

(b) How is film formation effected by driers in oxidative drying coatings? Write about Surface dry, Hard dry and Tack free tests. (6)

Q.4(a) Define Gloss. What are different types of Gloss? How is Gloss measured? Distinguish between gloss of solvent based paint and water based paint. (6)

(b) What is difference between Adhesion and Flexibility? What are the factors that affect the flexibility of coatings and how it is checked? (6)

OR

(b) Write the reaction responsible for corrosion of Iron substrate and how is paint tested in normal humidity cabinet. (6)

Q.5(a) Write about mechanical theory of adhesion of coating to the substrate. (6)

(b) What are the different hardness tests? Explain the Koenig-Persoz instrument? (6)

OR

(b) Mention in detail about the two defects each in NC lacquer and latex paint system. (6)

Q.6(a) Explain the term 'Exterior Durability'? Write about photoinitiated degradation of pigmented coatings in natural weathering exposure? (6)

(b) Write about Chalking, Checking and Yellowing defects. (6)

OR

(b) Write about the following defects (6)

(a) Viscosity increase (b) Cissing (c) Poor drying in oxidative coatings

